

OPTIMAL TIMING FOR SURGERY IN INFECTIVE ENDOCARDITIS

Thesis

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بسم الله الرحمن الرحيم

"ويسئلونك عن الروح قل الروح من أمر ربي
وما أوتيتم من العلم إلا قليلاً"

صدق الله العظيم
(الآية: 85، سورة الإسراء)

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LIST OF ABBREVIATIONS

CABG	:	Coronary artery bypass grafting
CPB	:	Cardiopulmonary bypass
C-RP	:	C-reactive protein
CVA	:	Cerebrovascular accident
ECG	:	Electrocardiogram
EE	:	Embolic event
EF	:	Ejection fraction
EO-PVE	:	Early onset prosthetic valve endocarditis
ESR	:	Erythrocyte sedimentation rate
HACEK	:	Haemophilus species, Actinobacillus, Cardiobacterium, Eikenella, and Kingella
IE	:	Infective endocarditis
IDU	:	Injection drug use
MRSA	:	Methicillin resistant Staph. aureus
NVE	:	Native valve endocarditis
NYHA	:	New York Heart Association
PVE	:	Prosthetic valve endocarditis
TEE	:	Transesophageal echocardiography
TTE	:	Transthoracic echocardiography
WCC	:	White cell count

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ABSTRACT

Background: Infective endocarditis is a diagnostic and therapeutic challenge that ultimately requires surgical intervention in 20% of all cases. Decisions regarding the indications for surgery, the timing, and the evaluation of the patient's ability to withstand the contemplated operation are complicated decisions requiring appropriate guidelines and sound judgment based upon extensive clinical experience.

Patients and Methods: In this study we followed 20 patients diagnosed with definite infective endocarditis according to the modified Duke's criteria and underwent cardiac surgery between June and December 2006. Clinical, laboratory and echocardiographic data were reported before surgery. Timing, type, indication for surgery and other intra-operative and post-operative variables were also reported.

Results: Rheumatic heart disease was the most common underlying cardiac risk factor (90% of patients), 75% of the patients had native valve endocarditis (NVE) and the remaining 25% had prosthetic valve endocarditis. The most common indications for surgical intervention were congestive heart failure (60%) and uncontrolled infection (60%). 90% of our patients were operated upon on elective basis. The most common post-operative complication was low cardiac output syndrome (15%) and new renal impairment. We had 6 mortalities (30%). The most common cause of in-hospital mortality was congestive heart failure and cardiogenic shock.

Conclusion: Preoperative renal impairment, abnormal white cell count, congestive heart failure and prosthetic valve endocarditis were associated with poor outcome. Further prospective studies with larger sample size are needed to study the actual prognostic value of other perioperative risk factors especially the benefit and optimal timing for surgical intervention.

Keywords:

Infective endocarditis, Surgery, Timing, Indications.

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**INTRODUCTION
AND
AIM OF THE WORK**

INTRODUCTION AND AIM OF WORK

Infective endocarditis is a very complex disease with a serious prognosis (**Tornos, 2004 and Jassal et al., 2006**).

Despite improved preventive strategies, rational antibiotic prescribing, the incidence of infective endocarditis remains high at 1.7-6.2 per 100,000 person years in the USA and Europe, with a one year mortality approaching 40% (**Wallace et al., 2002 and Prendergast et al ., 2004**).

This lack of improvement in prognosis might be due to the fact that endocarditis is now occurring in old people, in patients unaware of having a cardiac disease , in patients with prosthetic valves , and is being caused by aggressive organisms such as staphylococci (**Netzer et al ., 2002 and Tornos, 2004**).

The continuing evolution of antimicrobial resistance among common pathogens that cause infective endocarditis creates additional therapeutic issues for physicians to manage this potentially life-threatening illness (**Baddour et al., 2005**).

Therefore every effort is needed in the field of diagnosis and management strategies (**Tornos, 2004**).

Once the diagnosis is established adequate antibiotics should be used and decisions regarding surgical treatment should be made early and surgery should be performed, when needed, without unnecessary delays (**Tornos, 2004**).

Decisions regarding surgical intervention are complex and depend on many individual factors that vary among patients, including the infective organism , vegetation size , presence of perivalvular infection , presence of embolism or heart failure , age and non-cardiac morbidities (**Baddour et al., 2005**).

The principal indications for cardiac surgery are heart failure, no control of infection, embolisms, large size of vegetations, severe valvar and perivalvar lesions, and infection caused by some microorganisms (**Delahaye et al., 2004**).

The **aim** of this study is to identify the prognostic markers of a bad outcome in a group of patients diagnosed with definite infective endocarditis and secondly to study the proper timing for surgery and surgical strategies in infective endocarditis and thus to identify patients for whom surgery may be beneficial.

REVIEW OF LITERATURE

INFECTIVE ENDOCARDITIS

Infective endocarditis, a microbial infection of the endocardial surface of the heart, has been classified as “acute” or “subacute–chronic” on the basis of the tempo and severity of the clinical presentation and the progression of the untreated disease **(Mylonakis et al., 2001)**.

Acute IE arises with marked toxicity and progresses over days to several weeks to valvular destruction and metastatic infection. In contrast, subacute IE evolves over weeks to months with only modest toxicity and rarely causes metastatic infection. Acute IE is caused typically, although not exclusively, by staphylococcus aureus, whereas the subacute syndrome is more likely to be caused by viridans streptococci, enterococci, coagulase negative staphylococci, or gram negative coccobacilli **(Braunwald et al., 2005)**.

The characteristic lesion, vegetation, is composed of a collection of platelets, fibrin, microorganisms, and inflammatory cells. It most commonly involves heart valves but may also occur at the site of a septal defect, on the chordae tendineae, or on the mural endocardium **(Mylonakis et al., 2001)**.